

Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources*. AP42 is located on the EPA web site at [www.epa.gov/ttn/chief/ap42/](http://www.epa.gov/ttn/chief/ap42/)

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02\_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

## **Background Report Reference**

**AP-42 Section Number:** 9.13.3

**Background Chapter:** 4

**Reference Number:** 2

**Title:** Telephone communication between  
Jill Guthrie, Midwest Research  
Institute, Kansas City, MO and Robert  
L. Ajax & Associates, Cary, NC

August 1992



AP-42 Section \_\_\_\_\_  
Reference \_\_\_\_\_  
Report Sect. 4  
Reference 2

**MIDWEST RESEARCH INSTITUTE**

425 Volker Boulevard  
Kansas City, Missouri 64110  
Telephone (816) 753-7600  
Telefax (816) 753-8420

September 8, 1992

Mr. Robert L. Ajax  
Robert L. Ajax & Associates  
1135 Kildare Farm Road, Suite 200  
Cary, North Carolina 27511

Dear Mr. Ajax:

Recently, we discussed by telephone the air emissions data collected at the Frito-Lay facility and reported in a document "Characterization of Industrial Deep Fat Fryer Air Emissions". This data will be used in the development of an EPA AP-42 Section entitled, "Fried Snack Food Industry". The purpose of this document will be to recommend emission factors for particulates and VOCs produced during the frying process.

The draft of this AP-42 section has been completed and undergone a technical review at Midwest Research Institute. As a result of the review, several questions about the Frito-Lay data have been posed.

It would be most helpful if you could assist us by addressing these concerns, or perhaps by directing us to individuals that can. I have faxed to you copies of the data charts taken from the Frito-Lay report: "Table 1, Particulate Matter Emissions", and "Table 2, Gaseous VOC Emissions". Several of the questions concern these data charts.

The following questions have been raised:

1. What is the date of the Frito-Lay report? Where was the report generated? This information is needed to properly reference the material.
2. Referring to Table 1, "Particulate Matter Emissions" and Table 2 "Gaseous VOC Emissions":

Are the emissions (lb/h) reported for each of the snack foods individual tests or averages of multiple tests?

3. Referring to Table 1, "Particulate Matter Emissions", concerning the control processes used during potato chip frying in cottonseed oil:

The chart states that a scrubber control was used and the samples were collected at the inlet. Is the inlet located at a position before the scrubber?

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4. Referring to Table 1, "Particulate Matter Emissions", the three tests with "stack" as the sample location:

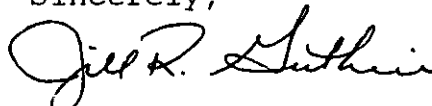
Were control processes used during these procedures? If so, what were the controls?

5. Referring to Table 2, "Gaseous VOC Emissions", the sample locations stated:

The sample locations for the potato chip fried in cottonseed test, and corn chip fried in sunflower test are "Inlet, M-5 outlet" and "Stack, M-5 outlet". Can you clarify this description? Were the inlet and stack sampled using the back half of the M-5 train?

Any help you can provide concerning these questions will be appreciated. We hesitate to submit the AP-42 to the EPA until these concerns are addressed. Please contact me if you have questions, at (816) 753-7600, Extension 512. If you have trouble reaching me, please leave me a voice mail at the 512 extension, and I will return your call as soon as possible. Thank you for your help in this matter.

Sincerely,



Jill R. Guthrie  
Mass Spectrometrists

Table 1  
Particulate Matter Emissions

Oil and Product	Cooker Design	Operating rate, lb/hr	Cooker Temp, deg F.	Stack Temp deg. F.	Sample Location	Particulate Matter (lb./hr.)	Back Half Particulate Matter (lb./hr.)
Sunflower Oil, Corn chips (High temp. process, with condenser, ESP controls)	Two fryers, each 950 lb./hr. "U" fryers, pan heat	2139 1846 2062	410	240 187 147	Inlet ESP Outlet, Cond. off ESP outlet, ESP off	0.6 0.32 0.24	0.3 0.21 0.11
Cottonseed Oil, Potato chips (High moisture process, scrubber control)	5000 lb./hr. Steam heat	4039	360	221	Inlet	3.34	0.78
Sunflower Oil, Corn chips (High temperature process)	2200 lb./hr. "U" fryer, steam heat	1970	410	233	Stack	0.5	0.34
Soybean Oil, Tortilla corn chips	2200 lb./hr. "U" fryer, steam heat	2089	370	185	Stack	0.35	0.14
Canola Oil, Multigrain chip	2600 lb./hr. Surface fry, steam heat	2420	370	208	Stack	0.98	0.26

Table 2  
Gaseous VOC Emissions

Oil and Product	Cooker Design	Operating rate, lb/hr	Cooker Temp, deg F.	Stack Temp deg. F.	Trap Temp deg. F.	Sample Location	Total VOC (lb./hr.)	Total NMHC (lb./hr.)	Comments
Sunflower Oil, Corn chips (High temp. process, with condenser, ESP controls)	Two fryers, each 950 lb./hr. "U" fryers, pan heat	2139	410	240	~ 80	Inlet		0.47	-Byron 301 HT GC/FID -1 sample/3 minutes -lb./hr. as Methane
		1846		187		ESP Outlet, Cond. off		0.54	
		2062		147		ESP outlet, ESP off		0.32	
Cottonseed Oil, Potato chips (High moisture process, scrubber control)	5000 lb./hr. Steam heat	4039	360	221	~ 60	Inlet	0.03		-OVA FID -lb/hr as methane
					~ 120	Inlet	0.26		-Bechman FID -lb/hr as methane
					~ 60	Inlet, M-5 outlet		0.04	C2 - C6 HC -GC/FID as methane
Sunflower Oil Corn chips (High temperature process)	2200 lb./hr. "U" fryer, steam heat	1970	410	240	~ 60	Stack	0.05		-OVA FID -lb/hr as methane
					~ 120	Stack	0.37		-Bechman FID -lb/hr as methane
					~ 60	Stack, M-5 outlet		0.02	C2 - C6 HC -GC/FID as methane
Soybean Oil Tortilla corn chips	2200 lb./hr. "U" fryer, steam heat	2089	370	157	~ 60	Stack	0.1		-Blendix FID -lb/hr as methane
			370	190	~ 60	Stack	0.12		
			360	190	~ 60	Stack M-5 outlet	0.18 0.1		
Canola Oil Multigrain chip	2600 lb./hr. Surface fry, steam heat	2420	370	208	~ 60	Stack	0.3		
						M-5 outlet	0.17		